New Machine Inspection and Installation

PROCEDURE

for

SUNNEN® FILTRATION UNIT

Model: PF-150

READ THE FOLLOWING INSTRUCTIONS THOROUGHLY AND CAREFULLY BEFORE UNPACKING, INSPECTING, OR INSTALLING THE SUNNEN® PF-150 FILTRATION UNIT.

"SUNNEN® AND THE SUNNEN LOGO ARE REGISTERED TRADEMARKS OF SUNNEN PRODUCTS COMPANY."

SUNNEN® PRODUCTS COMPANY • 7910 MANCHESTER ROAD • ST. LOUIS, MO 63143, U.S.A. • PHONE: 314-781-2100

GENERAL INFORMATION

The Sunnen® equipment has been designed and engineered for a wide variety of parts within the capacity and limitation of the equipment. With proper care and maintenance this equipment will give years of service.

READ THE FOLLOWING INSTRUCTIONS CAREFULLY AND THOROUGHLY BEFORE UNPACKING, INSPECTING, OR INSTALLING THIS EQUIPMENT.

IMPORTANT: Read any supplemental instructions BEFORE installing this equipment. These supplemental instructions give you important information to assist you with the planning and installation of your Sunnen equipment.

Sunnen Technical Service Department is available to provide telephone assistance for installation, programming, & troubleshooting of your Sunnen equipment. All support is available during normal business hours, 8:00 AM to 4:30 PM Central Time. Emergency breakdown support is available on a 24 hour / 7 day basis.

Review all literature provided with your Sunnen equipment. This literature provides valuable information for proper installation, operation, and maintenance of your equipment. Troubleshooting information can also be found within the Instructions. If you cannot find what you need, call for technical support.

Where applicable, programming information for your Sunnen equipment is also included. Most answers can be found in the literature packaged with your equipment.

Help us help you. When ordering parts, requesting information, or technical assistance about your equipment, please have the following information available:

- Have ALL MANUALS on hand. The Customer Services Representative or Technician will refer to it.
- Have Model Number and Serial Number printed on your equipment Specification Nameplate.
- Where Applicable: Have Drive model and all nameplate data. Motor type, brand, and all nameplate data.

For Troubleshooting, additional information may be required:

- Power distribution information (type - delta, wye, power factor correction; other major switching devices used, voltage fluctuations)
- Installation Wiring (separation of power & control wire; wire type/class used, distance between drive and motor, grounding).
- Use of any optional devices/equipment between the Drive & motor (output chokes, etc.).

For fast service on your orders call:

Sunnen Automotive Customer Service toll free at: 1-800-772-2878

Sunnen Industrial Customer Service toll free at: 1-800-325-3670

Customers outside the USA, contact your local authorized Sunnen Distributor.

Additional information available at: http://www.sunnen.com or e-mail: sunnen@sunnen.com

NOTE: Sunnen reserves the right to change or revise specifications and product design in connection with any feature of our products contained herein. Such changes do not entitle the buyer to corresponding changes, improvements, additions, or replacements for equipment, supplies or accessories previously sold. Information contained herein is considered to be accurate based on available information at the time of printing. Should any discrepancy of information arise, Sunnen recommends that user verify the discrepancy with Sunnen before proceeding.

ESD PREVENTION REVIEW

Let's review the basics of a sound static control system and its effective implementation. First, in the three step plan:

1. Always ground yourself when handling sensitive components or assemblies.
2. Always use a conductive or shielded container during storage or transportation. These materials create a Faraday cage which will isolate the contents from static charges.
3. Open ESD safe containers only at a static safe work station.

At the static safe work station, follow these procedures before beginning any work:

A. Put on your wrist strap or foot grounding devices.

B. Check all grounding cords to make sure they are properly connected to ground, ensuring the effective dissipation of static charges.

C. Make sure that your work surface is clean and clear of unnecessary materials, particularly common plastics.

D. Anti-static bubble wrap has been included for use at the machine when an ESD safe workstation is not available.

You are now properly grounded and ready to begin work. Following these few simple rules and using a little common sense will go a long way toward helping you and your company in the battle against the hazards of static electricity. When you are working with ESD sensitive devices, make sure you:

GROUND

ISOLATE

NEUTRALIZE

SUNNEN® LIMITED PRODUCT WARRANTY

Sunnen® Products Company and its subsidiaries (SPC) warrant that all new SPC honing machines, gaging equipment, tooling, and related equipment will be free of defects in material and/or workmanship for a period of one year from the date of original shipment from SPC.

Upon prompt notification of a defect during the one-year period, SPC will repair, replace, or refund the purchase price, with respect to parts that prove to be defective (as defined above). Any equipment or tooling which is found to be defective from improper use will be returned at the customer's cost or repaired (if possible) at customer's request. Customer shall be charged current rates for all such repair.

Prior to returning any SPC product, an authorization (RMA#) and shipping instructions must be obtained from the Customer Service Department or items sent to SPC will be returned to the customer.

Warranty Limitations and Exclusions This Warranty does not apply to the following:

- Normal maintenance items subject to wear and tear: (belts, fuses, filters, etc).
- Damages resulting from but not limited to:
  - › Shipment to the customer (for items delivered to customer or customer's agent F.O.B., Shipping Point)
  - › Incorrect installation including improper lifting, dropping and/or placement
  - › Incorrect electric power (beyond +/- 10% of rated voltage) including intermittent or random voltage spikes or drops
  - › Incorrect air supply volume and/or pressure and/or contaminated air supply
  - › Electromagnetic or radio frequency interference from surrounding equipment (EMI, RFI)
  - › Storm, lightning, flood or fire damage
  - › Failure to perform regular maintenance as outlined in SPC manuals
  - › Improper machine setup or operation causing a crash to occur
  - › Misapplication of the equipment
  - › Use of non-SPC machines, tooling, abrasive, fixturing, coolant, repair parts, or filtration
  - › Incorrect software installation and/or misuse
  - › Non-authorized customer installed electronics and/or software
  - › Customer modifications to SPC software

THE LIMITED WARRANTY DESCRIBED HEREIN IS EXPRESSLY IN LIEU OF ALL ANY OTHER WARRANTIES. SPC MAKES NO REPRESENTATION OR WARRANTY OF ANY OTHER KIND, EXPRESS OR IMPLIED, WHETHER AS TO MERCHANTABILITY, FITNESS FOR A PARTICULAR PURPOSE OR ANY OTHER MATTER. SPC IS NOT RESPONSIBLE FOR THE IMPROPER USE OF ANY OF ITS PRODUCTS. SPC SHALL NOT BE LIABLE FOR DIRECT, INDIRECT, INCIDENTAL, OR CONSEQUENTIAL DAMAGES INCLUDING BUT NOT LIMITED TO: LOSS OF USE, REVENUE, OR PROFIT. SPC ASSUMES NO LIABILITY FOR PURCHASED ITEMS PRODUCED BY OTHER MANUFACTURERS WHO EXTEND SEPARATE WARRANTIES. REGARDLESS OF ANY RIGHTS AFFORDED BY LAW TO BUYER, SPC's LIABILITY, IF ANY, FOR ANY AND ALL CLAIMS FOR LOSS OR DAMAGES WITH RESPECT TO THE PRODUCTS, AND BUYER'S SOLE AND EXCLUSIVE REMEDY THEREFORE, SHALL IN ALL EVENTS BE LIMITED IN AMOUNT TO THE PURCHASE PRICE OF THAT PORTION OF THE PRODUCTS WITH RESPECT TO WHICH A VALID CLAIM IS MADE.

Shipping Damages

Except in the case of F.O.B., Buyer's destination shipments, SPC will not be liable for any settlement claims for obvious and/or concealed shipping damages. The customer bears the responsibility to unpack all shipments immediately and inspect for damage. When obvious and/or concealed damage is found, the customer must immediately notify the carrier's agent to make an inspection and file a claim. The customer should retain the shipping container and packing material.

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Any alteration or reverse engineering of the software is expressly forbidden and is in violation of this agreement.

SPC reserves the right to update the software covered by this agreement at any time without prior notice and any such updates are covered by this agreement.

SAFETY INSTRUCTIONS

READ FIRST

This machine, like any machine tool, may be dangerous if used improperly. Please read all warnings and instructions before attempting to use this machine.[1]

DO NOT remove or defeat any safety device.

Always wear eye protection when operating this machine.

DO NOT attempt any repair or maintenance procedure beyond those described in this book. Contact your Sunnen Service Representative for repairs not covered in this book.

CE Indicates CE version ONLY.

[1] DO NOT touch electrical components until main input power has been turned off and *CHARGE* lamps are extinguished. WARNING: The capacitors are still charged and can be quite dangerous.

INTRODUCTION

Sunnen PF-150 Filtration Unit is designed to filter grit and metal particles from coolant supply on Sunnen Precision Honing Machines and other manufacture machines.

Unit is a 100% filter in that it filters all of coolant that passes through it; none is bypassed unless you intentionally bypass it. In operation, unit's pump sucks dirty coolant from machine reservoir and pushes this dirty coolant through a 5-micron paper filter element. Clean filtered coolant is then returned to machine.

Unit pumps an oversupply of filtered coolant to machine. This oversupply of coolant is bled off to machine reservoir by overflowing receiving bucket or by action of optional low-pressure relief valve (MBB-1620 Pump Bypass Kit), depending upon which method of installation is employed.

As filter canister fills with sludge being removed from coolant, an ample supply of filtered coolant continues to be supplied to machine. Over 75 cubic inches (1.2 liters) of sludge can accumulate in canister without interfering with filtering operation. When filter element clogs, coolant supply to machine is shut off. 5-micron filter element can be changed easily in a few minutes, restoring flow filtered coolant.

Important information to assist you with the unpacking and installation of your Sunnen Vertical Honing System.

NEW MACHINE
INSPECTION & INSTALLATION PROCEDURE
FOR SUNNEN® PF150 FILTRATION UNIT

GENERAL

This section is designed to aid in installation of Sunnen PF-150 FILTRATION Unit.

Unit may be used in either of two ways:

First - Unit can be installed to supply clean coolant to machine pump without additional adapters or fittings. Belt-driven pumps will then supply clean coolant to machine's flow control manifold. *(See Installation.)*

Second - Unit may also be installed using optional MBB-1620 Pump Bypass Kit (not supplied, must be ordered separately). When unit is installed in this manner, machine pump is bypassed and clean coolant is supplied directly from Unit to machine's flow control manifold. advantages of this installation is a stronger, more constant flow of coolant to workpiece; and a slight increase in power at machine's spindle, since spindle motor is no longer operating machine's pump. (See Optional Installation.)

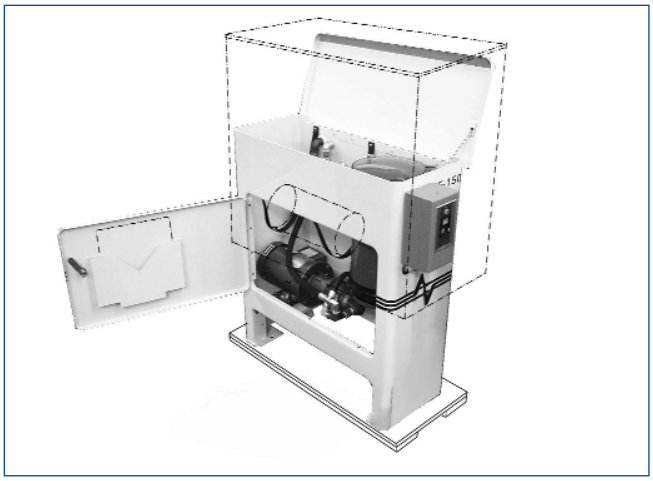


FIGURE 1, Unpacking

SUGGESTED TOOLING

The following tools are required for installation:
Knife Screw Driver (std.)
Hex Wrenches (1/8 & 5/32 in.)
Open End Wrench (7/16 & 9/16 in.)

UNPACKING

Unpack Unit as follows *(see Figure1)*:

1. Cut Bands on shipping carton.
2. Cut around base of outer shipping carton and lift carton off.
3. Cut down side of inner shipping carton and remove.
4. Open Unit and remove any contents packaged inside unit.
5. Open Accessory Pack and inventory contents *(see Figure 2)*.
6. Remove any Packaging from inside Unit.
7. Inspect Unit and Accessories for signs of damage resulting from improper handling by carrier. If damage is evident, immediately file a claim with carrier and notify Sunnen Customer Service.

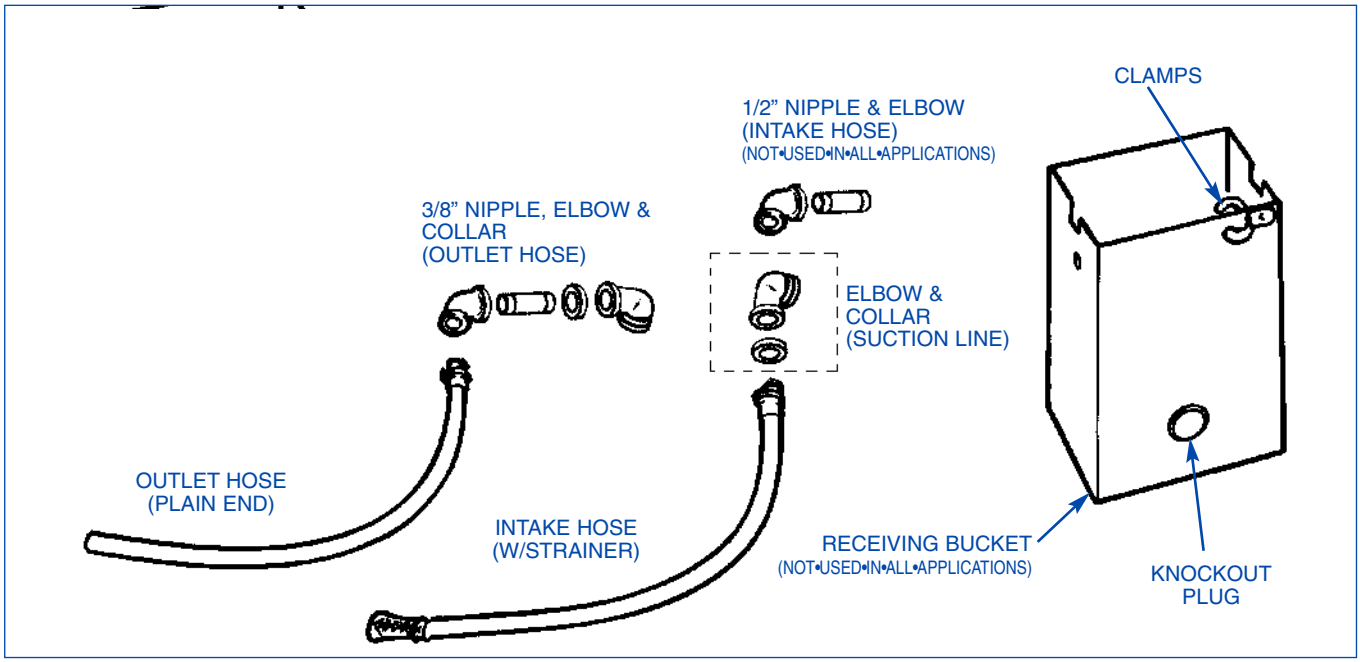


FIGURE 2, PF-165 Installation Kit

INSTALLATION - ML Application

To install Unit on one of Sunnen ML-Series Power Stroked Honing Machines, proceed as follows:

NOTE: Receiving Bucket IS NOT used when PF-150 is used with ML-Series Honing Machines.

1. Drain coolant from machine reservoir as instructed in machine operating instruction book.

2. Turn OFF all power to machine. Unplug electrical power supply cord or disconnect at main power source.

3. Remove reservoir from machine and clean as instructed in machine operating manual.

4. Install Knockout Plugs in two holes in base of interior wall of reservoir *(see Figure 3)*.

5. Elbows and pipe nipple supplied with Kit will be installed in Holes in left side panel of Reservoir.

6. Outlet: Apply Permatex No. 2 Sealant (or equivalent) to 3/8in. Nipple and assemble 3/8in. Elbows with Collars to machine base as shown *(see Figure 4)*. Tighten securely to prevent leaks.

Apply Permatex No. 2 Sealant (or equivalent) to Fitting on end of Outlet Hose. Then connect Hose to inside Elbow and tighten securely.

7. Intake: Apply Permatex No. 2 Sealant (or equivalent) to Fitting on end of Intake Hose and assemble 1/2in. Elbows with Collars to machine base as shown *(refer to Figure 4)*. Tighten securely to prevent leaks. Then attach Strainer to end of Intake Hose with Clamp provided.

8. Slide Reservoir back into machine.

9. Connect Intake Hose (Dirty Oil) and Outlet Hose (Filtered Oil) between Filtration Unit and machine *(see Figure 5)*. Use sealant on all threaded connections and tighten securely to prevent leaks.

NOTE: These oil hoses are attached to Unit cabinet for shipment. Connect hoses to machine first, then to swivel adapter on Unit cabinet.

10 Open top to Unit and remove cover clamp and cover.

Insert filter element into container, rotate element slightly while inserting to make it slide down center post more easily *(see Figure 6)*.

Replace cover, center carefully on rubber gasket to assure no leakage. Then replace Clamp and tighten Hex Bolt in Clamp Halves until halves meet, then tighten T-Handle.

11. Hookup is now complete. Check for proper oil line routing.

12. Make Electrical Connection.

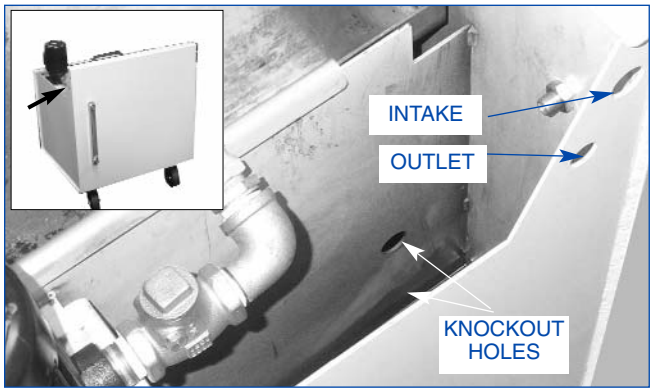


FIGURE 3, Knockouts

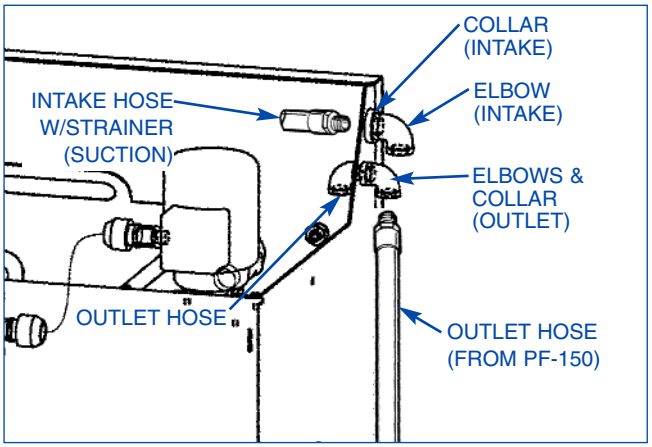


FIGURE 4, Connections

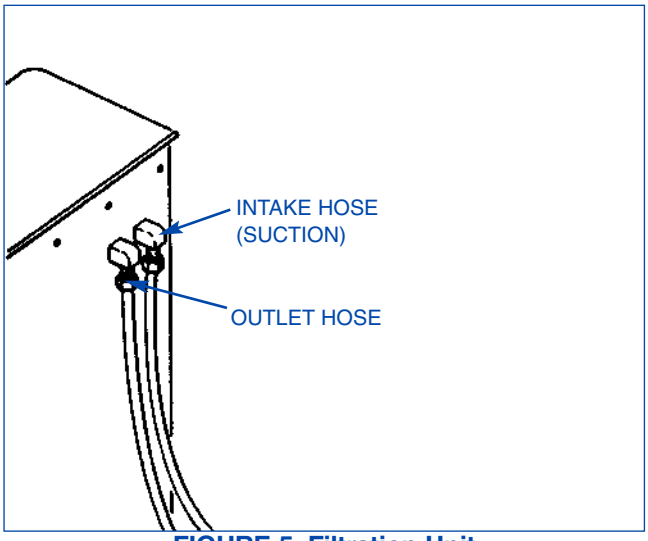


FIGURE 5, Filtration Unit

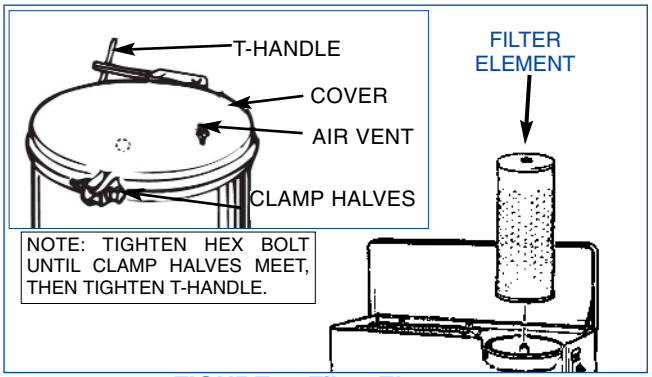


FIGURE 6, Filter Element

INSTALLATION - Standard Application

To install Unit on one of Sunnen Precision Honing Machines, proceed as follows:

1. Drain coolant from machine reservoir as instructed in machine operating instruction book.

2. Turn OFF all power to machine. Unplug electrical power supply cord or disconnect at main power source.

3. Remove Left Rear Cover of machine base and remove Oil Pump Belt *(see Figure 7)*.

4. Locate coolant line (tube and spring assembly) inside machine base that connects oil pump to Flow control manifold, and disconnect. Do not discard.

5. Clean machine reservoir. Remove reservoir from machine and clean as instructed in machine operating manual.

6. Attach Receiving Bucket to pump support *(see Figure 8)*. Pump Support must engage notches in front and rear walls of Bucket. Knockout Plug should face left side of reservoir, as seen when facing front of machine. DO NOT remove Knockout Plug.

7. Place reservoir back in machine and reconnect oil line to Flow control manifold.

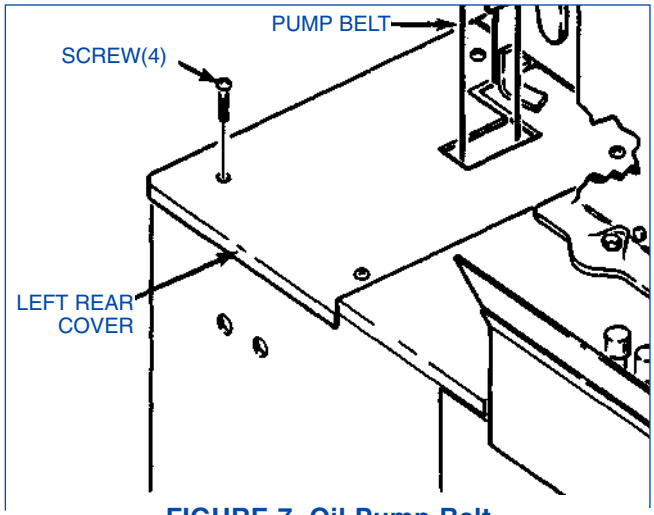


FIGURE 7, Oil Pump Belt

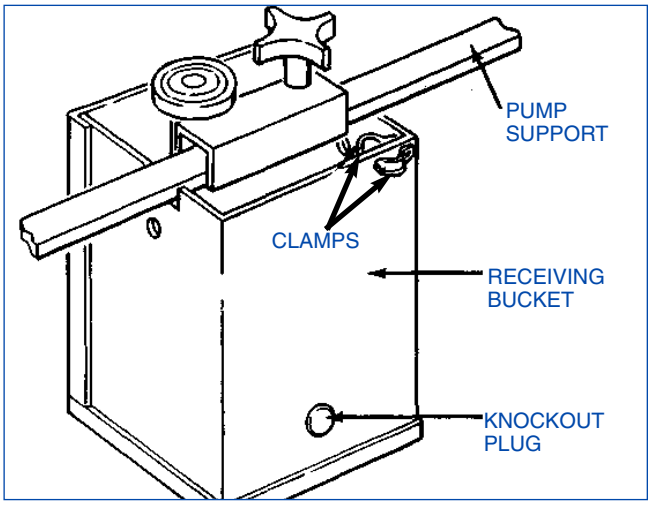


FIGURE 8, Receiving Bucket

8. Replace oil pump belt and adjust tension as instructed in machine operating instruction book.

9. If so Equipped: Remove two knockouts from left side panel of machine base. Elbows and pipe nipples supplied with Kit will be installed in these Holes *(see Figure 9)*.

On some early model Sunnen honing machines, and other manufacturers machines, holes were not provided in side panel of machine base. With these machines, locate and drill one 7/ in. (22 mm) diameter Hole and one 3/4in. (19 mm) diameter Hole. If sheet metal drills or hole saws are not available, use a piece of wood to back up area being drilled.

On Sunnen honing machines manufactured prior to 1979, both Holes in machine base were 3/4in. (19 mm) diameter. Enlarge Hole nearest back of machine base to 7/8in. (22 mm) diameter.

10. Apply Permatex No. 2 Sealant, or equal to 3/8in. Nipples and assemble 3/8in.Elbows with Collars to machine base *(see Figure 10)*. Tighten securely.

11. Connect Intake Hose (with strainer) to rear 12/in. Elbow. Use sealant on threaded connection and tighten securely.

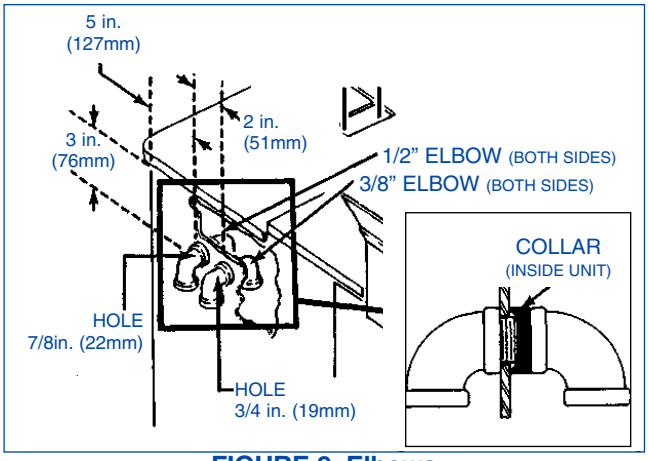


FIGURE 9, Elbows

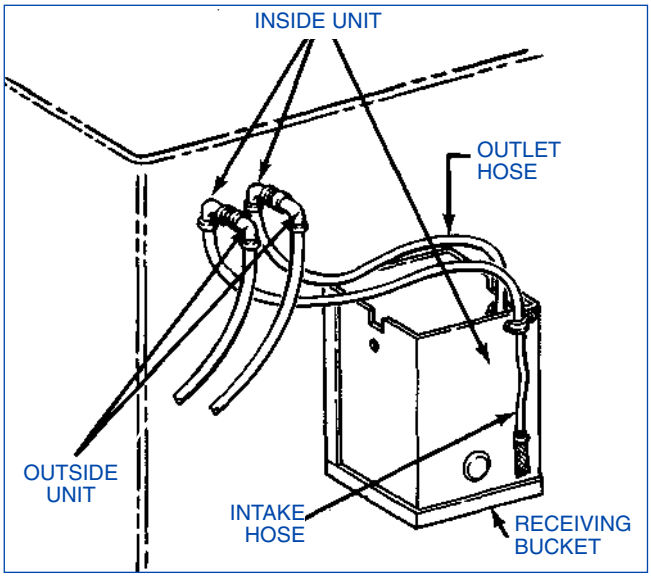


FIGURE 10, Coolant Lines

12. Connect Outlet Hose (plain end) to forward 3/8in. Elbow. Use sealant on threaded connection and tighten securely.

13. Loosen clamps on Receiving Bucket. Install Intake under clamp on outside of Bucket; and install Outlet Hose under clamp on inside of bucket. Then tighten clamps.

14. Place Unit at left side or in back of machine.

15. Connect Intake and Outlet Hoses between Unit and machine *(see Figure 11)*. Use sealant on all threaded connections and tighten securely to prevent leaks.

NOTE: These oil hoses are attached to Unit cabinet for shipment. Connect hoses to machine first, then to swivel adapter on Unit cabinet.

16. Open top to Unit and remove clamp and cover.

17. Insert Filter Element into container, rotate element slightly while inserting to make it slide down center post more easily *(see Figure 12)*.

18. Replace cover, center carefully on rubber gasket to assure no leakage. Then replace Clamp and tighten Hex Bolt in Clamp Halves until halves meet, then tighten T-Handle.

19. Hookup is now complete. Check for proper oil line routing.

20. Proceed to Electrical Connection.

NOTE: Coolant will be replaced in honing machine and left rear cover of honing machine base will be reinstalled during Operational Check.

INSTALLATION - Pump Bypass Kit

Filtration Unit may also be installed using Optional MBB-1620 Pump Bypass Kit. To install using optional Kit, proceed as follows:

1. Drain coolant from machine reservoir as instructed in machine operating instruction book.

2. Turn OFF all power to machine. Unplug electrical power supply cord or disconnect at main power source.

3. Remove Left Rear Cover of machine base and remove Oil Pump Belt *(see Figure 13)*.

4. Locate oil line (tube and spring assembly) inside machine base that connects pump to Flow control manifold and. Do not discard.

5. Clean machine reservoir. Remove reservoir from machine and clean as instructed in machine operating manual.

6. If so Equipped: Remove two knockouts from left side panel of machine base. Elbows and pipe nipples supplied with Kit will be installed in these Holes *(see Figure 14)*.

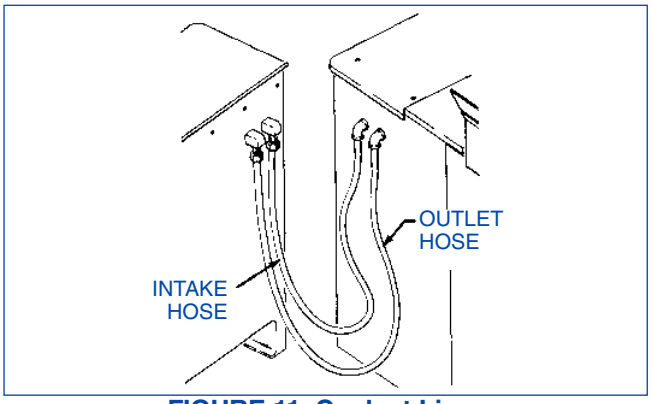


FIGURE 11, Coolant Lines

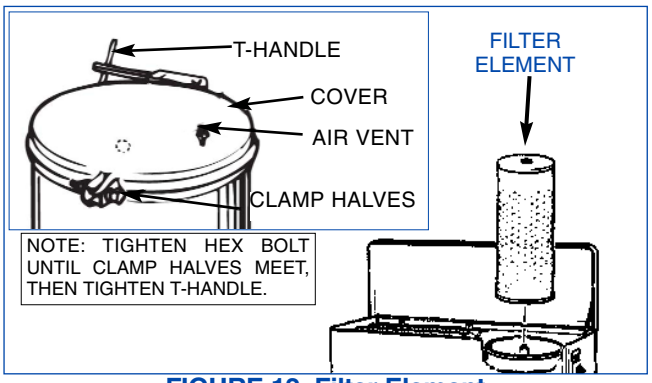


FIGURE 12, Filter Element

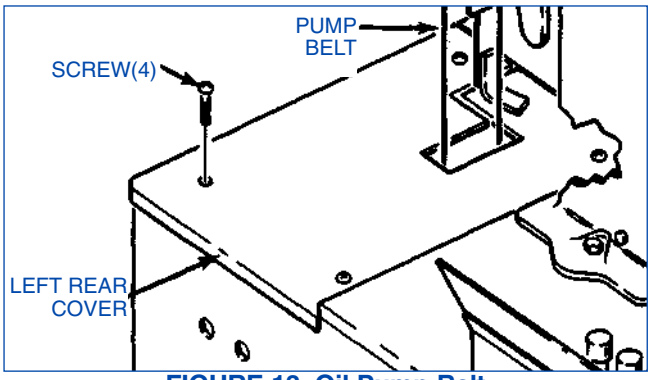


FIGURE 13, Oil Pump Belt

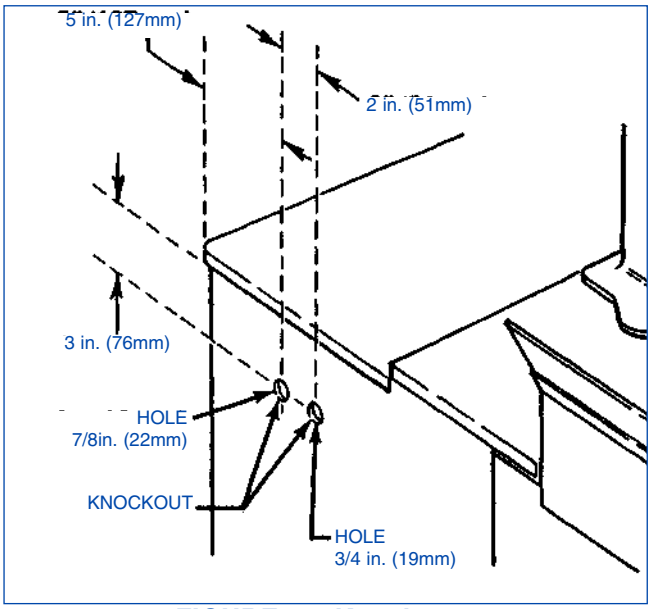


FIGURE 14, Knockouts

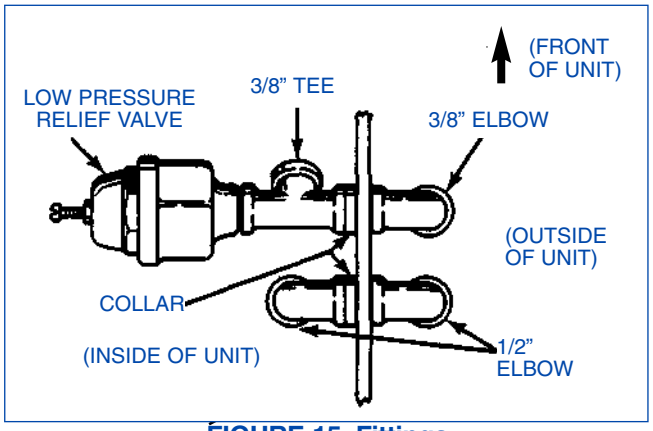


FIGURE 15, Fittings

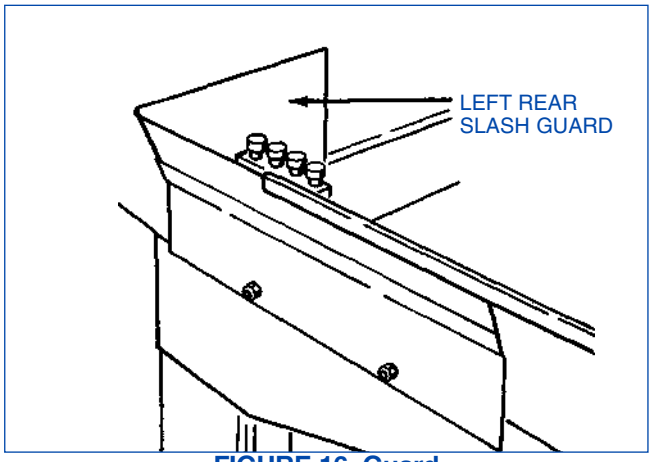


FIGURE 16, Guard

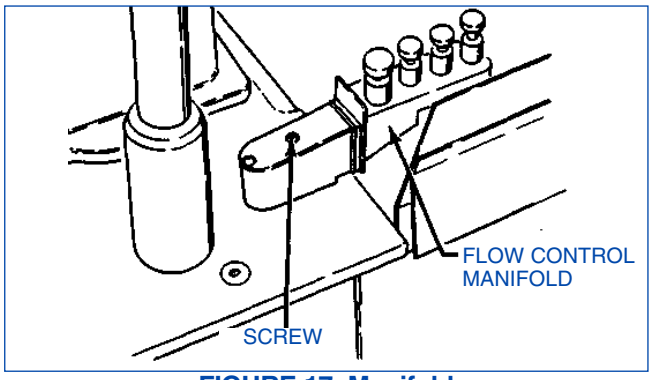


FIGURE 17, Manifold

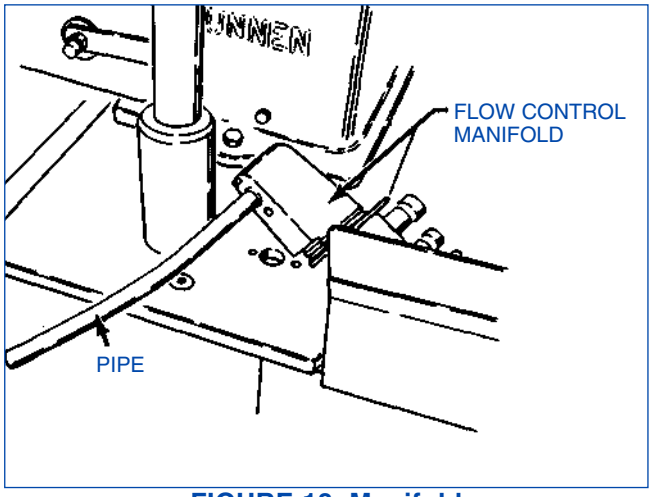


FIGURE 18, Manifold

On some early model MBB-1650 honing machines, holes were not provided in side panel of machine base. With these machines, locate and drill one 7/8in. (22 mm) diameter Hole and one 3/4in. (19 mm) diameter Hole. If sheet metal drills or hole saws are not available, use a piece of wood to back up area being drilled.

On honing machines manufactured prior to 1979, both Holes in machine base were 3/4in. (19 mm) diameter. Enlarge Hole nearest back of machine base to 7/8in. (22 mm) diameter.

7. Apply Permatex No. 2 Sealant, or equal to 1/2in. Nipple and 3/8in. Elbows *(see Figure 15)*. Install Nipple, Elbows, and Collar in 7/8in. (22 mm) diameter Hole as shown. Collar is installed on inside of machine base. Tighten securely to prevent leaks.

9. Apply sealant to all threaded connections and install following items thru 3/4in. (19-mm) diameter Hole as shown *(refer to Figure 15)*:
   3/8" Elbow (PF-165 Installation Kit)
   3/8" Close Nipple (PF-165)
   Collar (PF-165)
   3/8" Tee (MBB-1620 Pump Bypass Kit)
   Low-Pressure Relief Valve (MBB-1620)

10. Tighten all pipe connections to prevent leaks.

11. Remove Left Rear Splash Guard from machine *(see Figure 16)*.

12. Loosen Screw and remove Flow Control Manifold *(see Figure 17)*.

13. Unscrew Pipe from Manifold; then reinstall Manifold and left rear splash guard on machine *(see Figure 18)*.

14. Apply sealant to threads on Nipple; then thread Nipple with Back Check Valve into manifold from inside machine base *(see Figure 19)*.

15. Screw Hose Barb (supplied) into Low-Pressure Relief Valve, use sealant on pipe threads *(see Figure 20)*.

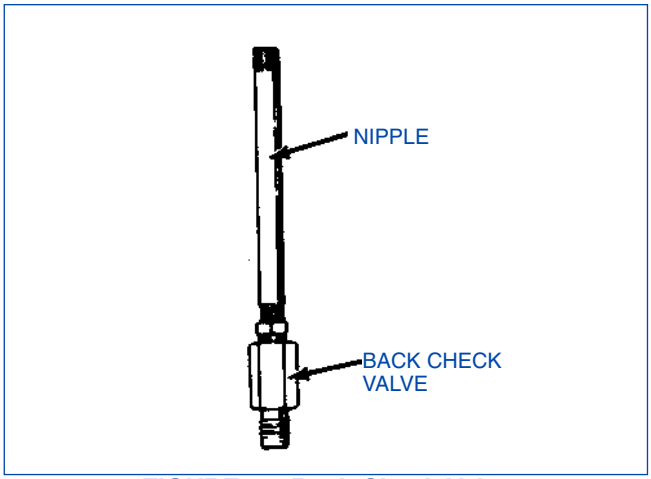


FIGURE 19, Back Check Valve

16. Screw threaded end of Outlet Hose into Center Opening of Tee Fitting as shown *(refer to Figure 20)*. Use sealant on pipe threads. Connect plain end of this hose to Hose Barb on Back Check. Fasten with hose clamp.

17. Reinstall reservoir in honing machine.

18. Slide Tube and Spring Assembly, removed in step 4, over hose barb on Low-Pressure Relief Valve and secure it with a Hose Clamp *(see Figure 21)*.

NOTE: Make sure free end of Tube and Spring Assembly is in reservoir. Otherwise, coolant will be pumped onto floor.

19. Place Unit at left side or in back of machine.

20. Connect Intake and Outlet Hoses between Unit and machine *(see Figure 22)*. Use sealant on all threaded connections and tighten securely to prevent leaks.

NOTE: These oil hoses are attached to Unit cabinet for shipment. Connect hoses to machine first, then to swivel adapter on Unit cabinet.

21 Open top to Unit and remove cover clamp and cover.

22. Insert filter element into container, rotate element slightly while inserting to make it slide down center post more easily *(see Figure 23)*.

23. Replace cover, center carefully on rubber gasket to assure no leakage. Then replace cover clamp.

24. Hookup is now complete. Check for proper oil line routing.

26. Proceed to Electrical Connection.

NOTE: Coolant will be replaced in honing machine and left rear cover of honing machine base will be reinstalled during Operational Check.

ELECTRICAL REQUIREMENTS

All wiring is to be performed by a competent, Licensed Electrician in accordance with all local, state, and federal codes and regulations; along with any special information provided on machine nameplate or electrical specification plate.

WARNING

All wiring and electrical equipment service should be performed by authorized personnel ONLY.

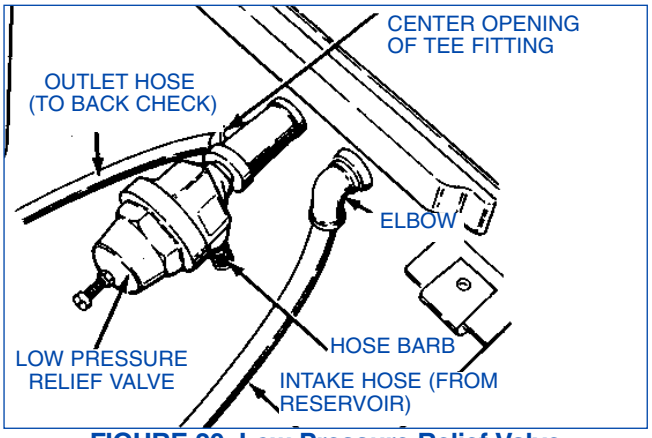


FIGURE 20, Low-Pressure Relief Valve

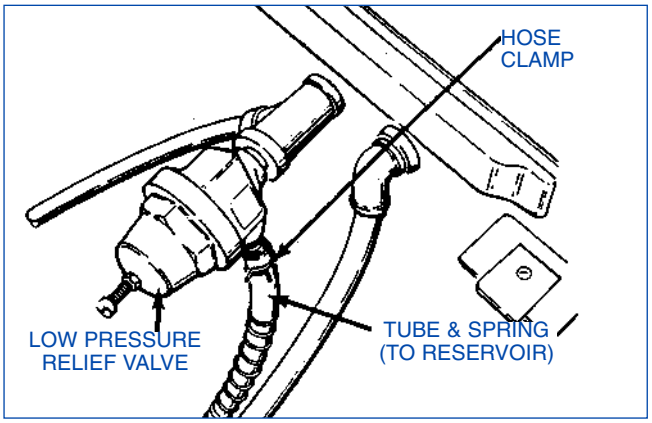


FIGURE 21, Coolant Line

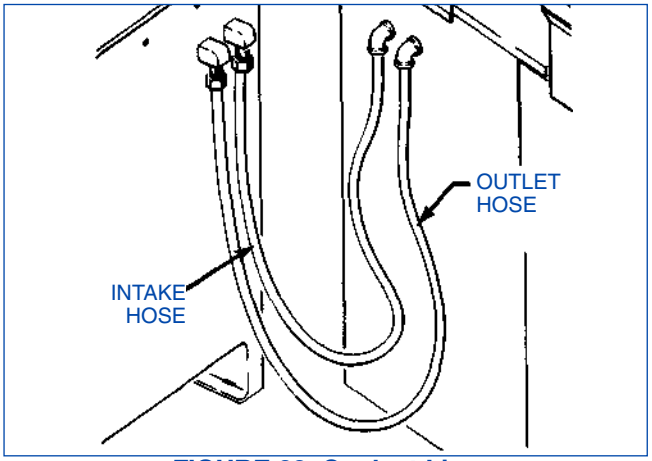


FIGURE 22, Coolant Line

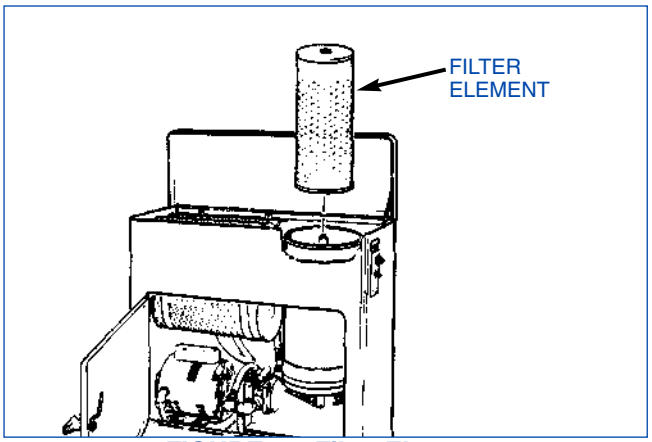
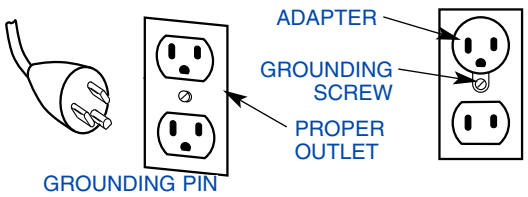


FIGURE 23, Filter Element

115V UNIT

Outlet for 115 volt unit should look like the following.

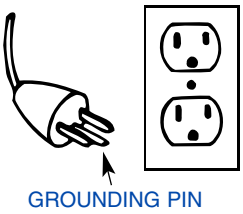


Electrical supply cord is equipped with a grounding pin. A temporary adapter, may be used to connect this plug to a 2-pole receptacle, if a properly grounded outlet is not available. Temporary adapter should ONLY be used until a properly grounded outlet can be installed by a qualified electrician. Green-colored rigid ear, lug, etc., extending from adapter MUST be connected to a permanent ground, such as a properly grounded outlet box.

Unit wiring should comply with all local, state, and federal codes and ordinances.

230V UNIT

Outlet for 230 volt unit should look like the following.



Electrical supply cord is equipped with a grounding type plug. Make sure unit is connected to an outlet having the same configuration as the plug. No adapter is available or should be used with this unit. If the unit MUST be reconnected for use on a different type of electrical circuit, the reconnection should be made by a qualified electrician.

Unit wiring should comply with all local, state, and federal codes and ordinances.

FIGURE 24, Electrical Requirements

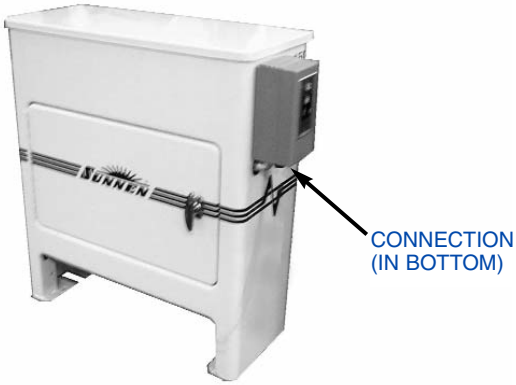


FIGURE 25, Switch Enclosure

CAUTION

Note model electrical supply cord requirement printed on machine nameplate or electrical specification plate. Do not attempt to connect machine if supply voltage is not within following acceptable limits as noted on nameplate or electrical specification plate. If supply voltage is not within these limits MACHINE WILL BE DAMAGED.

Verify supply voltage is same as voltage on Machine Nameplate or Electrical Specifications Plate.

If supply voltage does not match voltage stated on Electrical Specification Plate but is within acceptable limits, electrical connection can proceed but Machine Conversion below will be necessary.

ELECTRICAL CONNECTION

Wiring is complete on all Filtration Units. Wiring diagrams are furnished with every unit. Also, each Unit is shipped with a tag attached that specifies operating voltage.

NOTE: The electrical data plate attached to Unit provides helpful data including maximum current requirements. Wiring diagram number for unit is stamped on this plate. Should additional copies be needed, specify DIAGRAM NUMBER with your request.

115/230 V, 60 Hz, Single Phase Units

These Units are supplied with an electrical cord and plug that is rated 250 volts, 15 amps. Cord and plug are generally considered as acceptable disconnecting means. If required by local code, disconnect switch, fuses, or circuit breakers must be provided by user *(see Figure 24)*.

230/460 V, 60 Hz, 3pH & 380/440 V, 50 Hz, 3pH Manual Start Units

Open switch enclosure cover and, with hardware provided, mount starter switch on Unit cabinet. Assemble cable connector to switch enclosure as shown *(see Figure 25)*. Wire cable conductors to switch as follows:

Red conductor to Terminal TI;
White conductor to Terminal T2;
Black conductor to Terminal T3;
Green conductor to Ground Lug.

3-phase supply (not furnished) must be brought into switch enclosure through one of knockouts provided. Locally approved line disconnect switch and over current protection (if required) are to be provided by user. When wiring is complete, reinstall switch enclosure cover.

ELECTRICAL - ML Application

WARNING

All wiring must be performed by a competent Licensed Electrician in accordance with all local, state and federal codes and regulations; along with any special information provided on the machine nameplate or electrical specification plate.

Verify supply voltage is the same as voltage on Machine nameplate or Electrical Specification Plate. Please note some models are sold with an external transformer that steps down the voltage to the machine's nameplate voltage. PF-150 nameplate voltage MUST BE THE SAME as ML-2000 nameplate voltage.

Option Installation Kit is required to connect the PF-150 to the ML-2000.

PF-167C for 230V 60Hz machine or
PF-168C for 400V 50Hz machine

Kit include fuseholder and fuses. The PF-150 is supplied with a cable that is to be installed into ML-2000 main electrical enclosure. *(Refer to wiring diagram shipped with PF-167C or PF-168C kits for electrical connection.)*

1. Open door to ML-2000 electrical enclosure.
2. Install Fuseholders (supply with kit) as shown *(see Figure 26)*.
3. Route cable (supply with kit) into ML-2000 Electrical enclosure and attach wires as shown:
   Red Wire (L1) to Fuse (4/5FU1);
   White Wire (L2) to Fuse (4/5FU2);
   Black Wire (L3) to Fuse (4/5FU3);
   Green Wire to Ground Lug (PE).
4. Install fuses (supply with kit) as shown.

OPERATIONAL CHECK

CAUTION

DO NOT run pump without priming.

1. Fill machine reservoir with Sunnen Industrial Coolant. Pull out movable tray to its fully extended position and pour coolant into tray.

CAUTION

Make Filtration Unit installation checkout with honing machine turned off.

2. Manually prime filter pump as follows *(see Figure 27)*:

- Disconnect Intake Hose on unit cabinet at location as shown.
- Fill Hose with honing oil.
- Reconnect Hose and tighten securely.

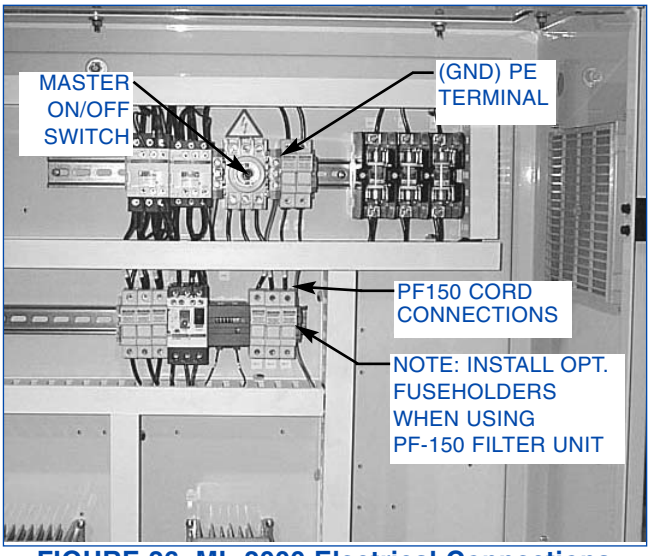


FIGURE 26, ML-2000 Electrical Connections

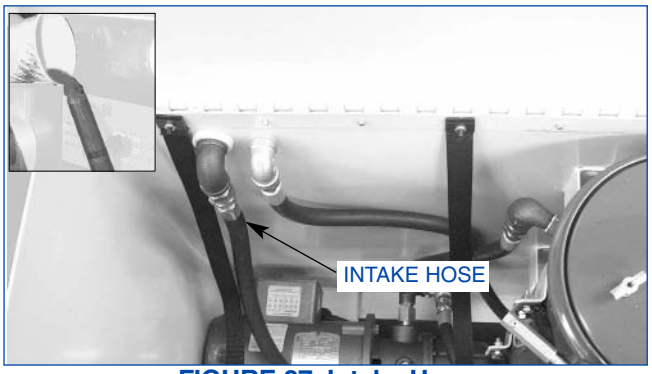


FIGURE 27, Intake Hose

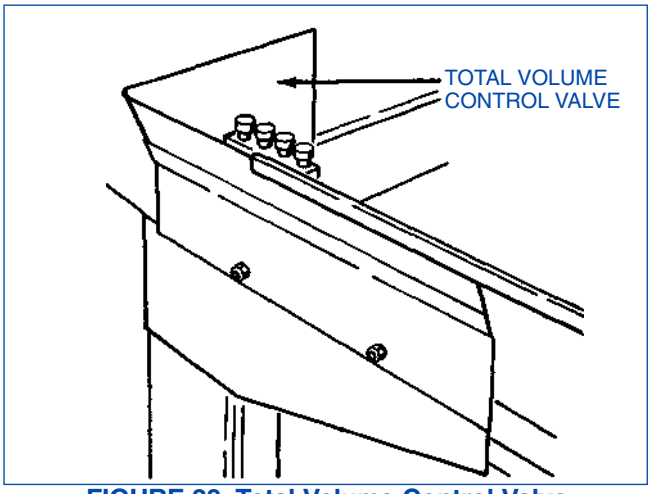


FIGURE 28, Total Volume Control Valve

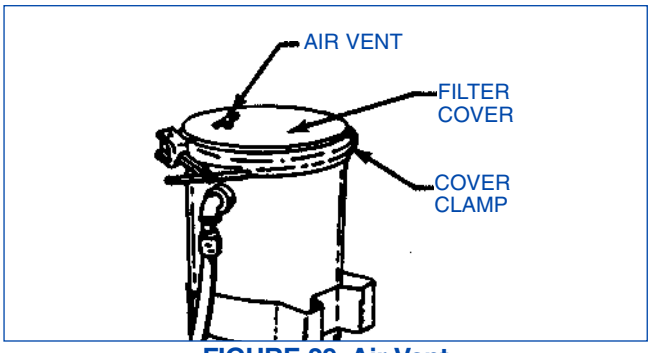


FIGURE 29, Air Vent

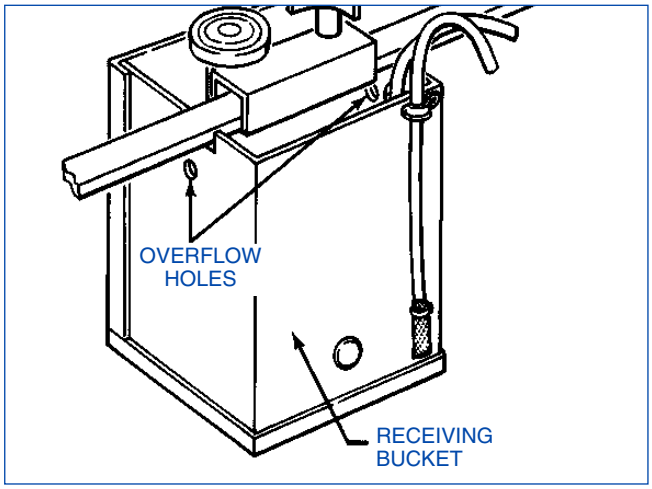


FIGURE 30, Receiving Bucket

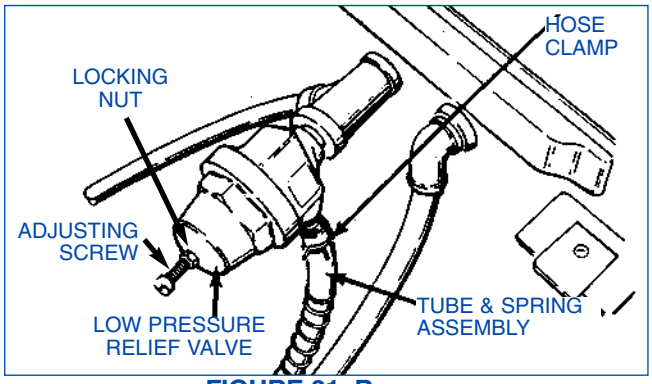


FIGURE 31, Bypass

FIGURE 31, High Pressure Relief Valve

3. Turn Total Volume Control Valve on honing machine clockwise to off position *(see Figure 28)*.

4. Check pump for correct rotation by momentarily switching on unit and observing shaft between pump and motor. Facing pump end, shaft should be turning counterclockwise.

NOTE: For Units which operate on 3-phase power, if filter pump is rotating backwards, remove power from power cord supplying Unit and reverse any two of line connections at terminals L1, L2, or L3 on switch.

For Units for use on single-phase power are connected for correct rotation when manufactured. If reversal of pump rotation is ever necessary, follow directions on pump motor terminal box cover.

5. Open Air Vent in Filter Cover and start filter pump. indicator light on Unit will indicate that power is on *(see Figure 29)*. As coolant fills filter container, air will escape through Air Vent.

6. When coolant appears at Air Vent (usually one to two minutes), close vent.

7. After air vent is closed, filtered coolant will be flowing back to honing machine reservoir.

If Receiving Bucket is used:

• Filtered coolant will be flowing into Receiving Bucket *(see Figure 30)*. To get coolant to work-piece, start honing machine motor and adjust flow control valves on flow control manifold in usual manner.

• Unit pumps more filtered oil into Receiving Bucket than honing machine uses. This excess filtered coolant is returned to reservoir through Overflow Holes.

If Pump Bypass Kit is used:

• Check for proper flow of filtered coolant to reservoir by slowly raising free end of Tube and Spring Assembly *(see Figure 31)*. Since Flow control manifold has been turned off, full flow of filtered coolant from Unit is being returned to reservoir through Tube and Spring Assembly.

• To get coolant to work-piece, adjust flow control valves on Flow control manifold in usual manner. It is not necessary to operate honing machine motor to apply coolant to workpiece when Pump Bypass Kit is used.

• Check for proper Low-Pressure Relief Valve adjustment. Adjust flow control valves on Flow control manifold as appropriate. You should be able to "overshoot" workpiece with 3 coolant streams with all oil jets operating at same time.

• Low-Pressure Relief Valve may be adjusted for more or less coolant pressure by turning Adjusting Screw on end of Low-Pressure Relief Valve. First, loosen Locking Nut, then tighten Adjusting Screw to increase oil pressure or loosen Adjusting Screw to decrease oil pressure. Retighten Locking Nut when adjustment is satisfactory.

CAUTION

Unit also has a High-Pressure Relief Valve on the pressure side of pump to prevent crushing of filter elements. This High-Pressure Relief Valve is located adjacent to filter pump *(see Figure 32)*. Valve is a factory sealed adjustment. DO NOT ATTEMPT TO READJUST.

7. Examine all hose and pipe fittings for any oil leaks. Retighten if necessary.

8. Reinstall left rear panel on honing machine base.

NOTES

NEW MACHINE
INSPECTION & INSTALLATION PROCEDURE
CHECKLIST

FOR SUNNEN® PF150 FILTRATION UNIT

MECHANICAL

- ❑ 1. Move unit to staging area.
- ❑ 2. Remove shipping carton.
- ❑ 3. Remove all loose components.
- ❑ 4. Check components against list.
- ❑ 5. Inspect Unit and components.
- ❑ 6. Move unit to desired location.

ELECTRICAL

- ❑ 1. Open doors to unit.
- ❑ 2. Route cables and connect to enclosure.
- ❑ 3. Attach power cord.
- ❑ 4. Route and connect cord to power source.
- ❑ 5. Visual check cable connectors.
- ❑ 6. Close doors.

GENERAL

- ❑ 1. Connect coolant system supply hose.
- ❑ 2. Connect coolant system return hose.
- ❑ 3. Fill coolant system reservoir.
- ❑ 4. Perform operational check.

Like any machinery, this equipment may be dangerous if used improperly. Be sure to read and follow instructions for operation of equipment.

FRACTION / DECIMAL / MILLIMETER EQUIVALENTS CHART

INCH FRACTION	INCH DECIMAL	MILLIMETER	INCH FRACTION	INCH DECIMAL	MILLIMETER	INCH FRACTION	INCH DECIMAL	MILLIMETER
. . . .	.003937	0,1000	9/32	.281250	7,1438	21/32	.656250	16,6688
. . . .	.007874	0,2000	19/64	.296875	7,5406	. . . .	.669291	17,0000
. . . .	.011811	0,3000	5/16	.312500	7,9375	43/64	.671875	17,0656
1/64	.015625	0,3969	. . . .	.314961	8,0000	11/16	.687500	17,4625
. . . .	.015748	0,4000	21/64	.328125	8,3344	45/64	.703125	17,8594
. . . .	.019685	0,5000	11/32	.343750	8,7313	. . . .	.708661	18,0000
. . . .	.023622	0,6000	. . . .	.354331	9,0000	23/32	.718750	18,2563
. . . .	.027559	0,7000	23/64	.359375	9,1281	47/64	.734375	18,6531
1/32	.031250	0,7938	3/8	.375000	9,5250	. . . .	.748031	19,0000
. . . .	.031496	0,8000	25/64	.390625	9,9219	3/4	.750000	19,0500
. . . .	.035433	0,9000	. . . .	.393701	10,0000	49/64	.765625	19,4469
. . . .	.039370	1,0000	13/32	.406250	10,3188	25/32	.781250	19,8438
3/64	.046875	1,1906	27/64	.421875	10,7156	. . . .	.787402	20,0000
1/16	.062500	1,5875	. . . .	.433071	11,0000	51/64	.796875	20,2406
5/64	.078125	1,9844	7/16	.437500	11,1125	13/16	.812500	20,6375
. . . .	.078740	2,0000	29/64	.453125	11,5094	. . . .	.826772	21,0000
3/32	.093750	2,3813	15/32	.468750	11,9063	53/64	.828125	21,0344
7/64	.109375	2,7781	. . . .	.472441	12,0000	27/32	.843750	21,4313
. . . .	.118110	3,0000	31/64	.484375	12,3031	55/64	.859375	21,8281
1/8	.125000	3,1750	1/2	.500000	12,7000	. . . .	.866142	22,0000
9/64	.140625	3,5719	. . . .	.511811	13,0000	7/8	.875000	22,2250
5/32	.156250	3,9688	33/64	.515625	13,0969	57/64	.890625	22,6219
. . . .	.157480	4,0000	17/32	.531250	13,4938	. . . .	.905512	23,0000
11/64	.171875	4,3656	35/64	.546875	13,8906	29/32	.906250	23,0188
3/16	.187500	4,7625	. . . .	.551181	14,0000	59/64	.921875	23,4156
. . . .	.196850	5,0000	9/16	.562500	14,2875	15/16	.937500	23,8125
13/64	.203125	5,1594	37/64	.578125	14,6844	. . . .	.944882	24,0000
7/32	.218750	5,5563	. . . .	.590551	15,0000	61/64	.953125	24,2094
15/64	.234375	5,9531	19/32	.593750	15,0813	31/32	.968750	24,6063
. . . .	.236220	6,0000	39/64	.609375	15,4781	. . . .	.984252	25,0000
1/4	.250000	6,3500	5/8	.625000	15,8750	63/64	.984375	25,0031
17/64	.265625	6,7469	. . . .	.629921	16,0000	1	1.000000	25,4000
. . . .	.275591	7,0000	41/64	.640625	16,2719	1-1/16	1.062500	26,9880

FORMULAS:

MULTIPLY		BY		TO GET
INCHES (in)	x	25.4	=	MILLIMETERS (mm)
FEET (ft)	x	0.3048	=	METERS (m)

MULTIPLY		BY		TO GET
MILLIMETERS (mm)	x	0.03937	=	INCHES (in)
METERS (m)	x	3.281	=	FEET (ft)

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